

J. D. BEERS.
Smut Machine.

No. 2,384.

Patented Dec. 10, 1841.

Fig. 4.

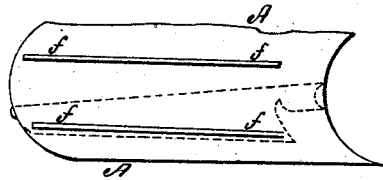


Fig. 2.

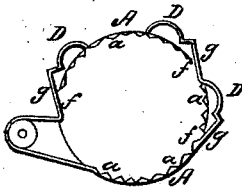


Fig. 3.

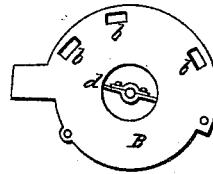
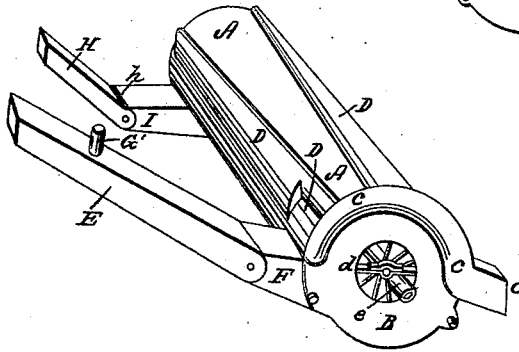


Fig. 1.



UNITED STATES PATENT OFFICE.

JOHN D. BEERS, OF PHILADELPHIA, PENNSYLVANIA.

MACHINE FOR CLEANING GRAIN, &c.

Specification of Letters Patent No. 2,384, dated December 10, 1841.

To all whom it may concern:

Be it known that I, JOHN D. BEERS, of the city of Philadelphia, in the State of Pennsylvania, have invented a new and useful manner of constructing a machine for scouring and cleaning wheat and other grain, the same being of the kind usually denominated a "smut machine;" and I do hereby declare that the following is a full and exact description thereof.

In describing this machine the dimensions which I shall give are those of the respective parts of one which I have essayed, and found to answer the intended purpose in a satisfactory manner, but in doing so I do not design to limit myself in this particular, as much latitude may be allowed in its relative proportions without departing from the general arrangement of the respective parts upon which the operation of the instrument is dependent.

Figure 1 in the accompanying drawing is a perspective view of the whole machine. A, A, is a cylinder of cast iron which may be thirty two inches long, and twenty two inches in diameter within. The inner surface of this is cast with ridges, or flutes, as shown at *a, a*, in the section, Fig. 2. These extend from end to end of the cylinder, being carried around it in a direction more or less spiral, so as to tend to carry the grain which is fed into it at one end, to the opposite end at which it escapes; the machine when in operation standing with the axis of the cylinder in a horizontal position. B, is one head of the cylinder, there being a similar head at the opposite end, excepting that the head, B, has three or more openings through it as shown at *b, b, b*, Fig. 3, which represents the reversed side of said head, these openings lead into a semicircular conduit, or space, formed by affixing to this head a cap piece C, C, Fig. 1, which is open at the end *c*. Within the cylinder A, A, is a revolving fan of the ordinary construction and there is an opening *d*, through each head of about six inches in diameter for the admission of air, which opening is crossed by a bar that sustains the shaft of the revolving fan; said shaft has on it a whirl *e*, by which it is to be driven. The vanes of the fan, of which there may be eight or ten, more or less, are about seven inches and extend from end to end of cylinder, being supported by spokes as usual; their outer edges

stand about one inch from the interior of the cylinder, and their inner edges will therefore be about even with the edge of the openings *d*, in each head, leaving a hollow chamber of nearly six inches in diameter for the passage of air to the vanes.

D, D, Figs. 1 and 2, are what I denominate conveyers; these conveyers consist of spaces through which the dust and light materials separated from the grain is to be conveyed into the conduit, or tubular space, formed on the head B, by the piece C, C, whence it is discharged through an opening at *c*. Of these conveyers there may be three or four and no advantage, it is believed, will be derived from increasing them beyond this number.

Fig. 4 shows a segment of the cylinder A, A, the portion D, D, of the conveyers being omitted for the purpose of showing the slots or openings made along the cylinder for the purpose of admitting the dust from it into the conveyers; these slots or openings are shown at *f, f*, and are seen also in the section Fig. 2; they are made about three fourths of an inch wide, and extend from within an inch or two of one end of the cylinder, to within about six inches of the head B, so far as the slots extend along the cylinder the general form of the interior of the conveyers will be that shown in the section Fig. 2, the part *g, g*, serving to cover the slots; but in the part D', Fig. 1, which extends beyond the slots, and conducts to the openings *b, b*, in the head B, the semicircular portion alone is continued; at this part the semicircular space may be equal to about six square inches, decreasing gradually toward the opposite end, where it may be equal to about one square inch. E, F, is the trunk or opening through which the grain is to pass into the cylinder, and through which a strong current of air is to pass from the cylinder. G, is a feeding tube through which the grain is to be conducted from the hopper into the trunk E. This trunk may be of wood, and about six inches square, and five feet long. It is attached to the part F, by a rule joint, thus allowing the elevation of E, to be varied at pleasure. The part F, may be of iron, and may be cast in one piece with the cylinder; and this, where it opens into the cylinder, may be increased to a foot or more in depth in order to admit the blast from the vanes freely into

it. H, and I, at the opposite end of the cylinder, constitute the discharge pipe; and these may be of the same capacity with the feed trunk E, F. The part I, may be cast in
 5 one piece with the cylinder, its opening into which embraces the bottom or lower part thereof; it may be about eighteen inches long from the center of the cylinder to the rule joint by which it is connected to the
 10 part H; its position is a little descending and the grain is discharged through a slot or opening of an inch in width, and extending across it near to the rule joint, on its under side, as shown by the dotted lines at
 15 h, on its upper side. The pipe H, may be two feet long.

Operation: The machine being properly fixed, and a velocity of from five to eight hundred revolutions in a minute being communicated to the fan, the grain is to be fed
 20 in through the tube G, and the trunk E. A strong blast of air will at this time be passing out through the trunks E, and H, and also through the opening at c. The inclination of E, may be so graduated as that every
 25 thing of less specific gravity than the grain will be blown out at its upper end, without passing into the cylinder. In passing through the cylinder the grain will be beaten
 30 by the fan and rubbed effectually and the matter separated from it will be blown through the slots f, f, into the conveyers, and will be carried off there at c. The current passing through I, and H, will finally
 35 separate any matter lighter than the grain which may find its way into the discharge pipe; this admitting of the same kind of

regulation, by means of its rule joint, with the feeding trunk.

Having thus fully described the nature 40 and operation of my machine for cleaning wheat and other grain, what I claim therein as my invention, and desire to secure by Letters Patent, is—

1. The manner in which I have arranged 45 and combined the cylinder, the conveyers, and the openings therefrom into and through the conduit or tubular space on the head of the cylinder, for the purpose herein fully explained and made known. 50

2. I claim also the manner of feeding the grain into the cylinder containing the revolving vanes, or beaters; the same being introduced through an inclined trunk, or pipe, furnished with a rule or other analogous joint, so as to give any desired elevation thereto and so that its inclination may be graduated to the nature of the grain, and the velocity of the motion of the fan; and 55

3. I likewise claim the mode of regulating 60 the winnowing of the grain in its discharge from the cylinder according to the intensity of the blast produced by the vanes, by means of a discharge tube furnished with a graduating joint, in combination with the vanes; 65 by means of which arrangement the same blast is made to winnow the grain both in the feeding and discharge tube, substantially in the manner herein made known.

JOHN D. BEERS.

Witnesses:

WM. BEERS,
 GEO. AMCOM.